



## Stephen Smith, MD

Clinical Assistant Professor, Ophthalmology

### CLINICAL OFFICE (PRIMARY)

- **Stanford Byers Eye Institute**

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### Bio

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#### BIO

ACCEPTING NEW PATIENTS

#### BIOGRAPHY

Stephen J. Smith, MD is a Vitreoretinal Surgeon and Clinical Assistant Professor in Ophthalmology at the Byers Eye Institute, Department of Ophthalmology, at the Stanford University School of Medicine. His goal is to put the needs of his patients first, and this commitment to patient-centered care dictates his approach to both his clinical and surgical care.

Dr. Smith received a Bachelor of Science degree in Molecular Biology and earned his MD - graduating with distinction - from the Mayo Clinic College of Medicine. He completed his internship at Columbia University College of Physicians and Surgeons Bassett Medical Center. Dr. Smith was an ophthalmology resident at University of Michigan's Kellogg Eye Center, consistently rated among the top 10 ophthalmology programs in the country. At University of Michigan he received numerous awards, including the Aizman Award, which is given to the resident who achieved the most significant scholarly achievement during residency with highest distinction in clinical excellence. Following a 2-year adult and pediatric vitreoretinal surgery fellowship at Stanford University's Byers Eye Institute, he joined the vitreoretinal faculty on a part-time basis.

Dr. Smith specializes in the management of adult vitreoretinal diseases including exudative and non-exudative macular degeneration, diabetic retinopathy, retinal vascular occlusions, central serous chorioretinopathy, myopic maculopathy and immunogammopathy maculopathy. Dr. Smith's surgical interests include complex retinal detachment repair, macular hole surgery, and scleral sutured fixated intraocular lens surgery. Dr. Smith is actively involved in the development of tools and techniques to improve vitreoretinal surgical outcomes, particularly for complex secondary IOL cases.

Dr. Smith is actively involved in the clinical and surgical training of Stanford's vitreoretinal fellows. In addition, he serves as a research mentor. His particular interest is in working with retina fellows and ophthalmology residents who have expressed a desire to learn more about medical device and

pharmaceutical innovation in retina, and uses his unique experience as an entrepreneur, clinician, and scientist to teach residents and fellows about the process of medical innovation, including fundraising, intellectual property, regulatory approvals, and business administration.

## **CLINICAL FOCUS**

- Vitreoretinal Disease and Surgery
- Macular Degeneration
- Diabetic Retinopathy
- Immunogammopathy Maculopathy
- Complex Retinal Detachment Repair
- Macular Hole
- Epiretinal Membrane
- Pathologic Myopia
- Retina Specialist

## **ACADEMIC APPOINTMENTS**

- Clinical Assistant Professor, Ophthalmology

## **HONORS AND AWARDS**

- Heed Fellow, Heed Ophthalmic Foundation (2016-2017)
- Aizman Award, University of Michigan (2016)
- Innovation Cup – 1st Place Award, University of Michigan (2016)
- Walter R. Parker Resident Teaching Award – 2nd Place, University of Michigan (2016)
- Heed Ophthalmic Foundation Resident Retreat – Nominated and selected to attend, Heed Ophthalmic Foundation (2015)
- Promising Technology Award, University of Michigan (2015)
- The George Slocum Resident Research Award – 1st Place, University of Michigan (2015)
- Walter R. Parker Resident Teaching Award – 3rd Place, University of Michigan (2015)
- Young Investigator Award and Travel Grant, European Paediatric Ophthalmological Society (2013)
- Mayo Medical School Class of 2012 representative for the LCME re-accreditation site visit, Mayo Clinic College of Medicine (2011)
- Dean's Outstanding Achievement Scholarship, Mayo Clinic College of Medicine (2008-2012)
- Graduated Magna Cum Laude with high honors in molecular biology, Grove City College (2006)
- Inductee: Beta Beta Beta National Biological Honor Society, Beta Beta Beta National Biological Honor Society (2005)
- Inductee: Pi Gamma Mu International Honor Society in Social Sciences, Pi Gamma Mu International Honor Society in Social Sciences (2005)
- Deans List with Distinction, Grove City College (2003-2006)
- President's Honor Role, University of Miami (2002)

## **PROFESSIONAL EDUCATION**

- Residency: University of Michigan Dept of Ophthalmology (2016) MI
- Fellowship: Stanford University Retina and Vitreous Fellowship CA
- Board Certification: Ophthalmology, American Board of Ophthalmology (2018)
- Internship: Bassett Medical Center (2013) NY
- Medical Education: Mayo Medical School (2012) MN

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

#### RESEARCH OVERVIEW

Dr. Smith's primary professional interest is developing solutions for unmet clinical and surgical vitreoretinal needs. Beginning in medical school, one of his primary focuses has been improving treatment outcomes in patients with retinoblastoma (RB). During his second year in medical school Dr. Smith published a manuscript on a novel technique to reduce the risk of tumor spread following intravitreal drug delivery in patients with RB. His work summarizing published data on tumor spread following intravitreal injection therapy (IVT) for RB has resulted in multiple platform presentations at national and international meetings, including an invited lecture at ARVO 2014. The results of this study influenced the growing trend toward broader acceptance of intravitreal chemotherapy in pediatric patients with treatment-resistant retinoblastoma vitreous seeds. A primary active area of research has included studying and publishing on ocular toxicity that results from the use of intravitreal melphalan and other agents for RB. This work, and subsequent publications from leaders in the field, has led to an increased awareness of ocular toxicity caused by injecting chemotherapeutic agents into the eyes of young children. This highlighted the need for toxicity data on additional chemotherapeutic agents for local delivery. To answer this question, Dr. Smith assembled an excellent group of collaborators and consultants, including internationally known experts at Bascom Palmer, Mayo Clinic, and Emory University. As a resident he secured a highly competitive career starter grant from the Knights Templar Foundation and used that funding and the expertise of his collaborators to carry out preclinical ocular toxicity studies of combination intravitreal chemotherapy for RB. His work in RB has led to a broader recognition of the challenges facing patients with RB who receive IVT and has led to a continued search for optimal local injectable therapies for patients with this disease.

#### INNOVATION HIGHLIGHTS

In addition to his work in retinoblastoma, Dr. Smith has been actively involved in developing technologies to improve outcomes for patients receiving intravitreal injection therapy (IVT) for macular degeneration, diabetic retinopathy, retinal vein occlusions and more. IVT has become the most common procedure performed by retina specialists in the United States, with an estimated 6 million injections given in the United States alone in 2016. Dr. Smith has co-developed technology that simplifies and streamlines the IVT process, removing barriers to treatment and improving patient outcomes. His work in innovation covers pre-clinical and clinical development work, and has given him expertise in diverse subject areas including fundraising, intellectual property portfolio development, team building, and business administration. He is a co-founder of iRenix Medical, a biotechnology and medical device start-up company committed to improving vision through optimization of the IVT process.

Dr. Smith remains dedicated to helping improve and restore vision and quality of life in patients with vitreoretinal disease. He is currently involved in both medical device and pharmaceutical innovation, and serves as a mentor for the Stanford University Biodesign Innovation Course.

## Publications

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### PUBLICATIONS

- **ENDOGENOUS KLEBSIELLA PNEUMONIAE ENDOPHTHALMITIS IN NORTHERN CALIFORNIA.** *Retina (Philadelphia, Pa.)*  
Shields, R. A., Smith, S. J., Pan, C. K., Do, D. V.  
2019; 39 (3): 614–20
- **Optical Coherence Tomography Angiography Highlights Chorioretinal Lesions in Ocular Coccidioidomycosis** *OPHTHALMIC SURGERY LASERS & IMAGING RETINA*

- Shields, R. A., Tang, P. H., Bodnar, Z. M., Smith, S. J., Silva, A.  
2019; 50 (3): E71–E73
- **Postoperative Adverse Events, Interventions, and the Utility of Routine Follow-Up After 23-, 25-, and 27-Gauge Pars Plana Vitrectomy.** *Asia-Pacific journal of ophthalmology (Philadelphia, Pa.)*  
Shields, R. A., Ludwig, C. A., Powers, M. A., Tran, E. M., Smith, S. J., Moshfeghi, D. M.  
2019
  - **A fatal case of Susac syndrome: The importance of ophthalmic examination in confirming the diagnosis.** *American journal of ophthalmology case reports*  
Shields, R. A., Kleinman, R. A., Smith, S. J., Sanislo, S. R., Nguyen, Q. D.  
2018; 12: 18–20
  - **Preclinical safety study of ultra-rapid, non-pharmacologic anesthesia for intravitreal injections.**  
Smith, S., Kim, G., Pipe, K. P., Besirli, C.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
  - **Clinical feasibility of ultra-rapid, non-pharmacologic anesthesia for intravitreal injection in patients receiving anti-VEGF treatment**  
Besirli, C. G., Smith, S., Pipe, K., Kim, G., Zacks, D. N., Gardner, T. W., Shah, A.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
  - **Automatic identification of referral-warranted diabetic retinopathy using deep learning on mobile phone images**  
Leng, T., Greven, M., Smith, S., Ludwig, C., Chang, R., Gargeya, R.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
  - **Preclinical Acute Ocular Safety Study of Combined Intravitreal Carboplatin and Etoposide Phosphate for Retinoblastoma** *OPHTHALMIC SURGERY LASERS & IMAGING RETINA*  
Mohney, B. G., Elner, V. M., Smith, A. B., Harbour, J. W., Smith, B. D., Musch, D. C., Smith, S. J.  
2017; 48 (2): 151-159
  - **Ocular Toxicity of Intravitreal Melphalan for Retinoblastoma**  
Smith, S. J., Smith, B.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2015
  - **Maculopathy in Patients with Monoclonal Gammopathy of Undetermined Significance**  
Smith, S. J., Johnson, M. W.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2014
  - **Ocular side effects following intravitreal injection therapy for retinoblastoma: a systematic review** *BRITISH JOURNAL OF OPHTHALMOLOGY*  
Smith, S. J., Smith, B. D., Mohney, B. G.  
2014; 98 (3): 292–97
  - **Quantifying Diplopia with a Questionnaire** *OPHTHALMOLOGY*  
Holmes, J. M., Liebermann, L., Hatt, S. R., Smith, S. J., Leske, D. A.  
2013; 120 (7): 1492–96
  - **Evaluating the risk of extraocular tumour spread following intravitreal injection therapy for retinoblastoma: a systematic review.** *The British journal of ophthalmology*  
Smith, S. J., Smith, B. D.  
2013; 97 (10): 1231–36
  - **Stereoacuity Thresholds before and after Visual Acuity Testing** *OPHTHALMOLOGY*  
Smith, S. J., Leske, D. A., Hatt, S. R., Holmes, J. M.  
2012; 119 (1): 164–69
  - **A Novel Mutation of LAMB2 in a Multigenerational Mennonite Family Reveals a New Phenotypic Variant of Pierson Syndrome** *OPHTHALMOLOGY*  
Mohney, B. G., Pulido, J. S., Lindor, N. M., Hogan, M. C., Consugar, M. B., Peters, J., Pankratz, V., Nasr, S. H., Smith, S. J., Gloor, J., Kubly, V., Spencer, D., Nielson, et al  
2011; 118 (6): 1137–44

- **Urine catecholamine levels as diagnostic markers for neuroblastoma in a defined population: implications for ophthalmic practice** *EYE*  
Smith, S. J., Diehl, N. N., Smith, B. D., Mohney, B. G.  
2010; 24 (12): 1792–96
- **Incidence, Ocular Manifestations, and Survival in Children with Neuroblastoma: A Population-Based Study** *AMERICAN JOURNAL OF OPHTHALMOLOGY*  
Smith, S. J., Diehl, N. N., Smith, B. D., Mohney, B. G.  
2010; 149 (4): 677–82
- **Incidence of Pediatric Horner Syndrome and the Risk of Neuroblastoma A Population-Based Study** *ARCHIVES OF OPHTHALMOLOGY*  
Smith, S. J., Diehl, N., Leavitt, J. A., Mohney, B. G.  
2010; 128 (3): 324–29